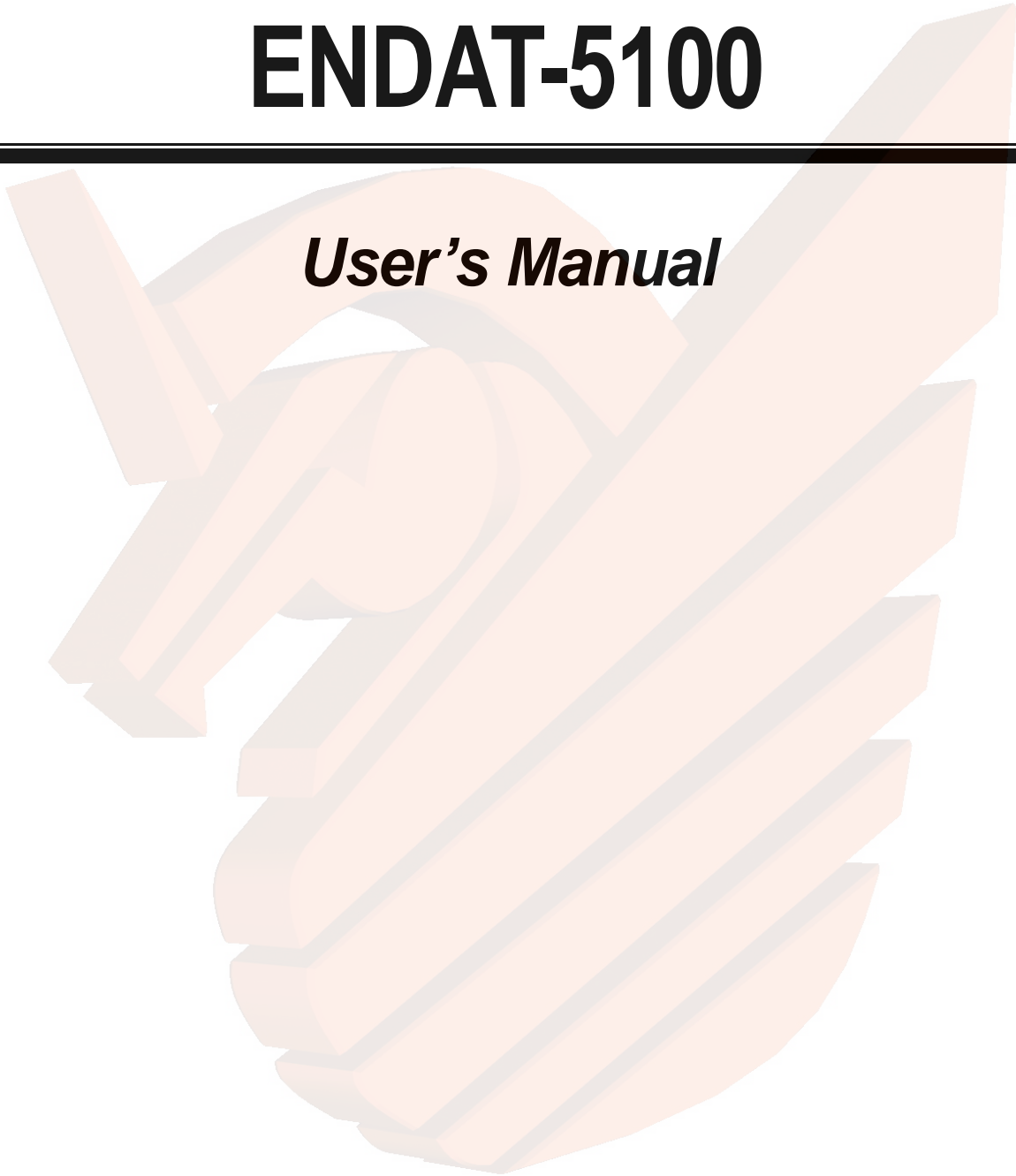


ENDAT-5100 USERS MANUAL
UNICORN COMPUTER CORP.

ENDAT-5100

User's Manual



UNICORN

For A6 or later version of ENDAT-5100

Feb.06.2014

ENDAT-5100 USERS MANUAL

UNICORN COMPUTER CORP.

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Installation Notice

The manufacturer recommends using a grounded plug to ensure proper motherboard operation. Care should be used in proper conjunction with a grounded power receptacle to avoid possible electrical shock. All integrated circuits on this motherboard are sensitive to static electricity. To avoid damaging components from electrostatic discharge, please do not remove the board from the anti-static packing before discharging any static electricity to your body, by wearing a wrist-grounding strap. The manufacturer is not responsible for any damage to the motherboard due to improper operation.

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Specification:

Model	ENDAT-5100
System Chipset	Intel® ICH8-M
CPU Supporting	Intel ATOM™ N455(Single Core, 1.66GHz, 6.5Watt) Intel ATOM™ D525(Dual Core, 1.8GHz, 13Watt)
Memory	ATOM™ N455: 1 x 204-pin SO-DIMM up to 2GB DDR3-667 ATOM™ D525: 1 x 204-pin SO-DIMM up to 4GB DDR3-667/800
Ethernet	Dual Gigabit LAN onboard GbE LAN1: Intel® 82567V; GbE LAN2: Intel® 82583V
VGA	Intel® GMA3150 DX9 GFX core integrated in CPU, DVMT4.0 share system memory
Dual view	VGA + LVDS, supports extended and clone mode
LVDS support	On-chip supports 18 bit single channel
Serial/Print	2 x Serial Ports with +5V & +12V Power Selector
RS 422 / 485	Optional (via COM 2)
SATA	2 x SATAII 300MB/s connectors with AHCI support
Compact Flash	1 socket with ejector
USB	USB 2.0 x 6 (4 external + 2 internal)
Expansion	Mini-PCle x1 slot
Watch Dog Timer	On-chip supports 1 to 255 seconds / minutes
AUDIO	HD Audio with 2W amplifier
Back Panel I/O	2 x USB double deck connectors support 4 ports USB 2.0
	2 x RJ-45 Connector
	1 x VGA D-SUB Connector
	1 x PS/2 Keyboard / Mouse connector support by Y cable
I/O Onboard	2 Watts Speaker out, Line-in, MIC-in, SPDIF Pin Header
	COM1, COM2 Box Header, LVDS Connector
	2 ports USB 2.0 Pin Header
	1 Digital I/O Port Pin Header support 4 IN and 4 OUT I/O
Power Supply	Wide range +12V ~ +24V DC power input
Form Factor	3.5" SBC (146mm x 104mm) with 10 Layers PCB

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Chapter 1. Introduction

In order to cope with the challenges of the system performance issues and demand of much more visually embedded system in diverse application, ENDAT-5100 system board provides the ultimate solution by Intel® ATOM N455 / D525 Processors (667/800 MHz). This package offers a high performance Intel® CPU with optimal power efficiency on the embedded market.

ENDAT-5100 supports single channel DDR3 667/800 MHz memory. The maximal capacity is up to 2GB (N455) or 4GB (D525).

ENDAT-5100 integrated Mobile Intel® Graphics Media Accelerator 3150 (GMA3150) which supports Microsoft DirectX 9 and MPEG-2 decoder for higher visually application.

ENDAT-5100 supports not only Single Channel LVDS but also various kinds of display include VGA and LVDS; Dual display is also feasible.

ENDAT-5100 provides one Mini-PCle socket to support one Mini-PCle interface.

The ideal solutions of ENDAT-5100

- POS system
- KIOSK
- Vehicle system
- Interactive system
- Industrial controller
- Gaming system
- Medical system
- Embedded system equipment

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1-1. Features

Basic Feature:

- Intel® Atom™ N455 / D525 processor.
- Single channel DDR3 SO-DIMM socket supports 667/800 MHz up to 4 GB.
- Dual PCI Express interface Gigabit Ethernet chip on-board.
- Intel® Graphics Media Accelerator 3150 (GMA3150).
- One Mini-PCIe socket support.
- HD Audio built-in 2W amplifier.
- Two fully functional serial ports.
- Wide range +12~24V DC input power

Notice:

The “+12V” voltages of ENDAT-5100 to 3.5” HDD, ODD, LCD backlight, and COM port power are insufficient if the input power (DC-IN1) is lower than “+16V”!

Only SSD, CF, USB flash disk, and 2.5” HDD are recommend if the input power (DC-IN1) is lower than “+16V”!

Software Support

- Drivers for major embedded operating systems: Linux, Windows7, Windows XP, Windows XP embedded and Windows CE 5.0/6.0.

Ordering information:

Standard edition:

ENDAT-5100-N4: Atom™ N455

ENDAT-5100-D5: Atom™ D525

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1-2. Unpacking

The motherboard comes securely packaged in a sturdy cardboard shipping carton. In addition to the User's Manual, the motherboard package includes the following items:

- ENDAT-5100 System Board
- One SATA HDD Cable
- LCD cable (**Optional**)
- CD with Driver utilities for on-board chipsets, VGA and LAN adapter

If any of these items is missing or damaged, please contact the dealer whom you purchased the motherboard from. Save the shipping material and carton in the event that you want to ship or store the board in the future.

Note: Leave the motherboard in its original package until you are ready to install it!

1-3. Electrostatic Discharge Precautions

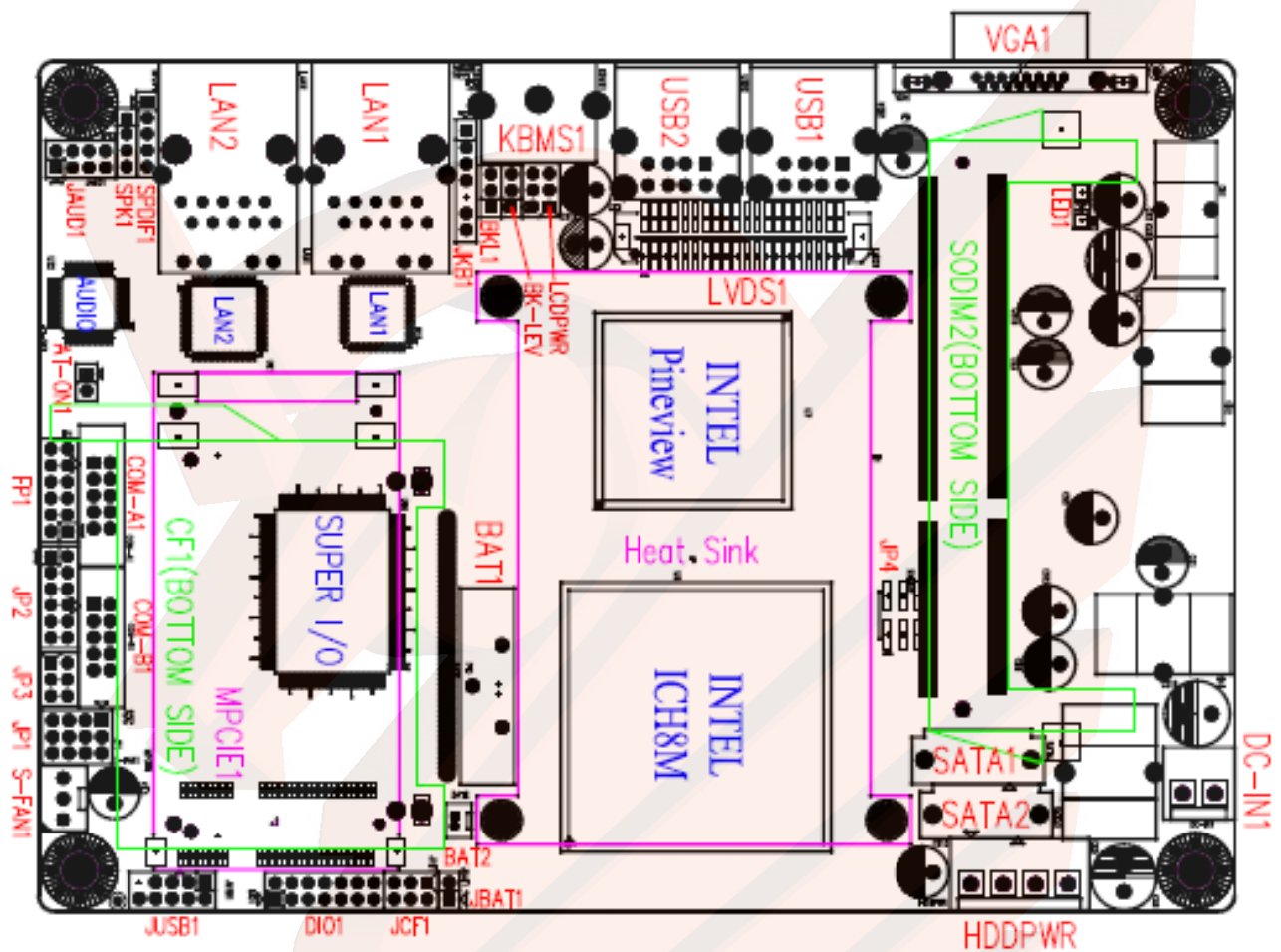
Make sure you properly ground yourself before handling the motherboard, or other system components. Electrostatic discharge can easily damage the components. Note: You must take special precaution when handling the motherboard in dry or air-conditioned environments.

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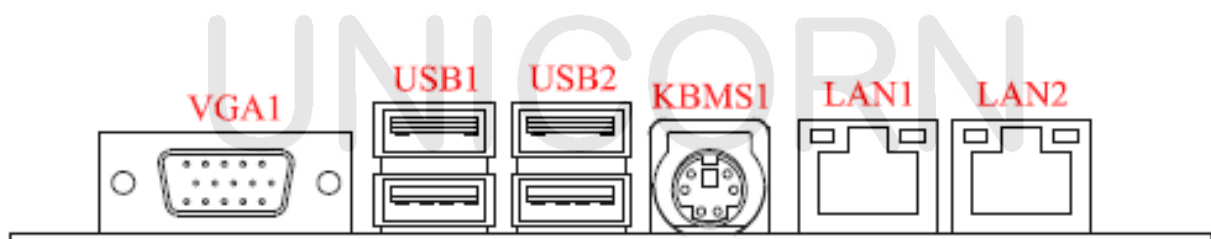
1-4. MOTHERBOARD LAYOUT.



FP1

11	WDT EN	SPK +	+ IDE LED	PWR LED	1
12	PWR	RESET	- IDE LED	- PWR LED	2

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Chapter 2. Setting up the Motherboard

2-1. Connectors / Headers and Jumpers

Connectors Overview:

Function	Connectors
Cooling Fan Connector	S-FAN1
DC Power Supply Connector	DC-IN1
HDD Power Connector	HDDPWR
USB Ports	USB1, USB2
LAN Ports	LAN1, LAN2
SATA Connector	SATA1, SATA2
DDR3 RAM Socket	SODIM2
CRT Output Connector	VGA1
PS/2 KB/MS Connector	KBMS1
18 bit LCD Panel Connector	LVDS1
Mini PCI-E Socket	MPCIE1
CF card Socket	CF1
RTC / CMOS Battery Socket	BAT1
2 ND RTC / CMOS Battery Connector	BAT2

Box Headers, Pin Headers Overview:

Function	Connectors
External PS/2 Device Header	JKB1
USB Port Header	JUSB1
Digital I/O Pin Header	DIO1
Line-In 、MIC-In Pin Header	JAUD1
Speaker Out Pin Header	SPK1
SPDIF Pin Header	SPDIF1
COM Port Box Header	COM-A1, COM-B1

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Jumpers Overview:

Function		Connectors
LVDS1	LCD Voltage Select	LCDPWR
	LCD Backlight Voltage Select	BKL1
	LCD Backlight Control Voltage Select	BK-LEV
Clear CMOS		JBAT1
Master/Slave Selector for CF card		JCF1
COM1/2 Voltage Selector		JP2
RS232 / 485 Selector for COM2		JP1, JP3
SATA Port Pin7 Select (for +5V/GND)		JP4
AT Power Mode		AT-ON1
Header for Case Panel		FP1
Power LED		FP1: Pin 1 (+), Pin 2(-)
HDD LED		FP1: Pin 2(+), Pin 4(-)
External Speaker		FP1: Pin 5(+), Pin 7(-)
Hardware Reset Switch		FP1: Pin 6, Pin 8
WDT Function Enable/Disable		FP1: Pin 9, Pin 11
ATX Power Supply On/Off Switch		FP1: Pin 10, Pin 12

Part 1: Onboard Jumpers

JBAT1: CMOS Data Clear (1x2 with 2.0mm)

Pin 2-3 *	Normal
Pin 1-2	Close for clear CMOS

JP2: COM1/2 Port Voltage Selector (2x6 with 2.0mm)

Voltage	+12V(DC)	R.I. *	+5V(DC)
JP2 (COM1)	1-2	3-4	5-6
JP2 (COM2)	7-8	9-10	11-12

JP1, JP3: RS232 / 422 / 485 Selectors for COM2 (2.0mm)

TYPE	JP1	JP3
RS-232 *	1-2, 4-5, 7-8, 10-11	1-2
RS-422	2-3, 5-6, 8-9, 11-12	3-4
RS-485	2-3, 5-6, 8-9, 11-12	5-6

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BK-LEV: LCD Backlight Control Voltage Select (1x3 with 2.0mm)

Voltage	+3.3V *	+5V
BK-LEV	1-2	2-3

BKL1: LCD Backlight Voltage Select (1x3 with 2.0mm)

Voltage	+12V	+5V *
BKL1	1-2	2-3

LCDPWR: LCD Voltage Select (2x3 with 2.0mm)

Voltage	+3.3V *	+5V	+12V
LCDPWR	1-2	3-4	5-6

JCF1: Master/Slave Selector for CF card (1x3 with 2.0mm)

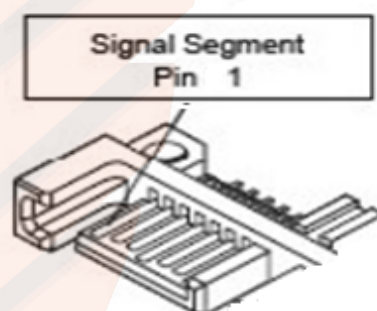
	Master *	Slave
JCF1	1-2	2-3

AT-ON1: AT Power Mode (1 x 2 with 2.00mm)

AT-ON1	Mode
Open	ATX Mode
Close	AT Mode

JP4: SATA Pin7 Select +5V/GND (2x3 with 2.0mm)

	GND *	+5V
SATA1 (Pin7)	1-3	3-5
SATA2 (Pin7)	2-4	4-6



Part 2: Onboard Connectors and Headers

JKB1: External PS/2 Device Header (1x7 with 2.0mm)

Pin No.	Signal
1	KB Data Out
2	KB Data In
3	KB CLK Out
4	KB CLK In
5	KEY
6	+5V
7	GND

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JUSB1: USB ports Header (2x5 with 2.0mm)

Pin No.	Signal	Pin No.	Signal
1	USB VCC	2	USB VCC
3	USBD2-	4	USBD3-
5	USBD2+	6	USBD3+
7	USB GND	8	USB GND
9	KEY	10	USB GND

DIO1: Digital I/O Header (2x7 with 2.0mm)

Pin No.	Signal	Pin No.	Signal
1	+5V	2	+5V
3	DIO-OUT0	4	DIO-IN0
5	DIO-OUT1	6	DIO-IN1
7	DIO GND	8	DIO GND
9	DIO-OUT2	10	DIO-IN2
11	DIO-OUT3	12	DIO-IN3
13	+3.3V	14	+3.3V

JAUD1: LINE-IN & MIC-IN Header (2 x 4 with 2.0mm)

Pin No.	Signal	Pin No.	Signal
1	LINE-IN-R	2	MIC-IN-R
3	JACK DETECT	4	JACK DETECT
5	AUDIO GND	6	AUDIO GND
7	LINE-IN-L	8	MIC-IN-L

Notice: Please connect the jack detect pin to “AUDIO GND” if the actual connector cannot support the jack detect function!

SPK1: Speaker Out Header (1 x 4 with 2.0mm)

Pin No.	Signal
1	Right channel +
2	Right channel -
3	Left channel -
4	Left channel +

Notice: Don't connect the “Right channel –” and “Left channel –” to “AUDIO GND” or “system GND”, it'll decrease the driver strength of on-board AUDIO amplifier!

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SPDIF1: SPDIF Header (1 x 5 with 2.0mm)

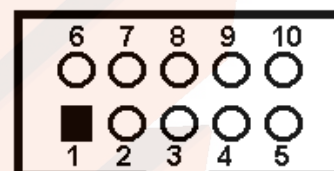
Pin No.	Signal	Pin No.	Signal
1	+5V	4	GND
2	N.C	5	SPDIF-IN
3	SPDIF-OUT		

BAT2: 2ND RTC / CMOS Battery Connector (1 x 2 with 1.25mm)

Pin No.	Signal
1	+3V
2	GND

COM-A1 (COM1), COM-B1 (COM2): COM1, COM2 Box Headers (2x5 with 2.0mm)

Pin No.	Signal	Pin No.	Signal
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND	10	N.C.



Box Header for COM2 port (RS-422→ 4 Wire)

Pin No.	Signal	Pin No.	Signal
1	-TXD	6	NA
2	+RXD	7	NA
3	+TXD	8	NA
4	NA	9	-RXD
5	NA		

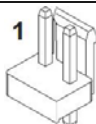
Box Header for COM2 port (RS-485→ 2 Wire)

Pin No.	Signal	Pin No.	Signal
1	Data -	6	NA
2	NA	7	NA
3	Data +	8	NA
4	NA	9	NA
5	NA		

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DC-IN1: DC Input connector (1x2 with 3.96mm)

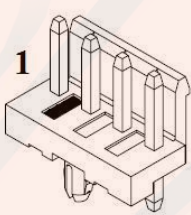
Pin No.	Signal	
1	GND	
2	+12V	

Notice:

The "+12V" voltages of ENDAT-5100 to 3.5" HDD, ODD, LCD backlight, and COM port power are insufficient if the input power (DC-IN1) is lower than "+16V"!

Only SSD, CF, USB flash disk, and 2.5" HDD are recommend if the input power (DC-IN1) is lower than "+16V"!

HDDPWR1: DC Output connector (1x4 with 3.96mm)

Pin No.	Signal	
1	+12V	
2	GND	
3	GND	
4	+5V	

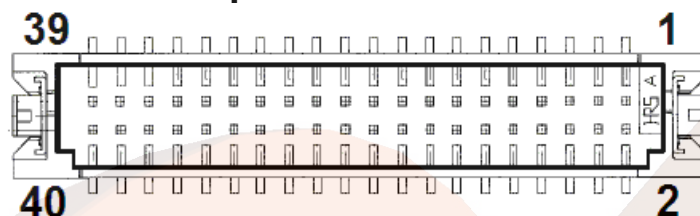
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LVDS: Single LVDS (18 bit only, 1.25mm)

MB: DF-13A-40DP-1.25V / Map: DF13-40DS-1.25C



Pin No.	Signal	Pin No.	Signal
1	VBL	2	VBL
3	GND	4	GND
5	DISP.ON/OFF	6	GND
7	LCD POWER	8	LCD POWER
9	GND	10	GND
11	Odd 0+	12	Odd 0-
13	Odd 1+	14	Odd 1-
15	Odd 2+	16	Odd 2-
17	N.C	18	N.C
19	Odd CLK+	20	Odd CLK -
21	GND	22	GND
23	N.C	24	N.C
25	N.C	26	N.C
27	N.C	28	N.C
29	N.C	30	N.C
31	N.C	32	N.C
33	LCD POWER	34	LCD POWER
35	GND	36	GND
37	GND	38	GND
39	VBL	40	VBL

Please make sure the Pin 1 location before plug-in LCD connector.
Please leave pin 23rd ~ pin 32nd unconnected if the single channel LVDS function is needed.

Please double check "jumper setting & LCD cable's orientation" before power-on, any incorrect installation may caused damaged of the LCD.

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2-2. Installing Memory

The DDR3 SO-DIMM socket of ENDAT-5100 supports single channel DDR3 SO-DIMM up to 2GB (N455) or 4GB (D525) memory. The speed of DDR3 memory can be DDR3-667 or DDR3-800.

2-3. Shared VGA Memory

The ENDAT-5100 built-in Intel® GMA3150 graphic engine with DVM 4.0 up to 384MB of system memory. The amount of video memory on motherboard determines the number of colors and the video graphic resolution.

2-4. Watch Dog Timer

Watch dog Timer (WDT) is a special design for system monitoring to secure the system work normally. WDT has an independent clock from the oscillator and could set time and clear/refresh WDT counter function. When time is up, WDT will send hardware RESET signal to reset system.

Timeout Value Range

-1 to 255

-Second or Minute

Sample code (using TurboC/C++ 3.0):

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```
#include <stdio.h>
#include <dos.h>
#include <dir.h>
void show_ver();
void main()
{
    unsigned int tt;
    clrscr();
    show_ver();
    tt=0;
    while((tt==0)|| (tt>255))
    {
        printf("\n\nPlease key in how many seconds you want to reset system (1~255):");
        scanf("%d",&tt);
    }
    outportb(0x2e,0x87);    //Unlock register
    outportb(0x2e,0x87);    //Unlock register
    outportb(0x2e,0x07);    //set Logic Device number pointer
    outportb(0x2f,0x08);    //set Logic Device number
    outportb(0x2e,0x30);    //set  WDTO active
    outportb(0x2f,0x01);    //set reg value active (bit0 =1 active,0 inactive )
    outportb(0x2e,0xf5);    //set WDTO Control Mode
    outportb(0x2f,0x04);    //set register value (bit3=1: minute. =0: second)
    outportb(0x2e,0xf6);    //set WDT Counter
    outportb(0x2f,tt);      //set time out value of WDT
}

void show_ver()
{
    unsigned char tmp0;
    printf("Designed by attila of UNICORN computer corp. \n2011/09/02  release
version:1.0a\n");
    printf("This program is design for test Watch Dog Timer for ENADT-5100
(W83627UHG).\n");
}
```

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2-5. Digital I/O

Pin define:

J1: DIGITAL I/O Pin Header (2 x 7 with 2.0mm)

Pin No.	Signal	Pin No.	Signal
1	+5V	2	+5V
3	DIO-O0	4	DIO-I0
5	DIO-O1	6	DIO-I1
7	GND	8	GND
9	DIO-O2	10	DIO-I2
11	DIO-O3	12	DIO-I3
13	+3.3V	14	+3.3V

Digital I/O port address:

This function is support by onboard super I/O chip; it can be control easily by change the register of super I/O chip via I/O port “2Eh” and “2Fh”. Please see the sample code of below for implement. Voltage tolerance: +/- 5% with 0V to +5V.

Sample code for input (using Turbo C/C++ 3.0):

bit No	7	6	5	4	3	2	1	0
Map	DIO-I3	DIO-I2	DIO-I1	DIO-I0	NA	NA	NA	NA

Sample code for input (using Turbo C/C++ 3.0)

```
#define input_port 0x2f // Digital input data port
Unsigned char read_data;
outportb(0x2e,0x87); //Unlock register
outportb(0x2e,0x87); //Unlock register
outportb(0x2e,0x07); //set Logic Device number pointer
outportb(0x2f,0x08); //set Logic Device number
outportb(0x2e,0x30); //set Device Active
outportb(0x2f,0x03); // set Bit 1 =GPIO5 ; 0=Inactive / 1= Active Default: 01h
outportb(0x2e,0xE0); // set GPIO Output / Input Port
outportb(0x2f,0xF0); // 0=Output/ 1=Input
// Bit 0~3 DIO-O0~ DIO03 / Bit4~7 DIO-I0~DIO-I3.
outportb(0x2e,0xE1); //Read DIO-Input register.
// n=DIO-O0~DIOO3 / m=DIO-I0~DIO-I3.
//Bit7~Bit3 = DIO-O3~DIO-O0.

read_data=inportb(input_port); // Read digital input data
printf("DIO-Input=%02X\n",read_data); //Show digital input data on screen
```

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Sample code for output (using Turbo C/C++ 3.0):

bit No	7	6	5	4	3	2	1	0
Map	NA	NA	NA	NA	DIO-O3	DIO-O2	DIO-O1	DIO-O0

Sample code for output (using Turbo C/C++ 3.0)

```

outportb(0x2e,0x87); //Unlock register
outportb(0x2e,0x87); //Unlock register
outportb(0x2e,0x07); //set Logic Device number pointer
outportb(0x2f,0x08); //set Logic Device number
outportb(0x2e,0x30); //set Device Active
outportb(0x2f,0x03); // set Bit 1 =GPIO5 ; 0=Inactive / 1= Active Default: 01h
outportb(0x2e,0xE0); // set GPIO Output / Input Port
outportb(0x2f,0xF0); // 0=Output/ 1=Input
                        // Bit 0~3 DIO-O0~ DIO3 / Bit4~7 DIO-I0~DIO-I3.

outportb(0x2e,0xE1); //Read DIO-Input register.
outportb(0x2f,0xnm); // n=DIO-O0~DIOO3 / m=DIO-I0~DIO-I3.
                        Bit7~Bit3 = DIO-O3~DIO-O0.

```

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Chapter 3. AWARD BIOS SETUP

Phoenix – Award BIOS CMOS Setup Utility

<ul style="list-style-type: none">> Standard CMOS Features> Advanced BIOS Features> Advanced Chipset Features> Integrated Peripherals> Power Management Setup> PnP/PCI Configurations> PC Health Status	<ul style="list-style-type: none">> Frequency/Voltage ControlLoad Optimized DefaultsSet Supervisor PasswordSet PasswordSave & Exit SetupExit Without Saving
--	---

Use the BIOS CMOS setup program to modify the system parameters to reflect the environment installed in your system and to customize the system as desired. Press the key to enter into the BIOS CMOS setup program when you turn on the power. Settings can be accessed via arrow keys. Press <Enter> to choose an option to configure the system properly.

In the main menu, press F10 or “SAVE & EXIT SETUP” to save your changes and reboot the system. Choose “EXIT WITHOUT SAVING” to ignore the changes and exit the setup procedure. Pressing <ESC> at anywhere during the setup will return to the main menu.

All of the above CMOS BIOS items require board knowledge on PC/AT system architecture. Incorrect setup could cause system malfunctions.

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3-1. Standard CMOS Features

The Standard Setup is used for the basic hardware system configuration. The main function is for Data/Time and Hard Disk Drive settings.

Item	Optimized defaults
Date (mm:dd:yy)	
Time (hh:mm:ss)	
> IDE Channel 0 Master	Press Enter
> IDE Channel 0 Slave	Press Enter
> IDE Channel 1 Master	Press Enter
Video	EGA/VGA
Halt On	All , But Keyboard

Video

Select the type of primary video subsystem.

<Choice: EGA / VGA, CGA 40, CGA 80, MONO>

Halt On

Set the system's response to specific boot errors.

<Choice: All Errors; No Errors; All, But Keyboard.>

IDE Channel 0~1 Primary Master/Slaver

Item	Optimized defaults
IDE HDD Auto-Detection	Press Enter
IDE Channel	Auto
Access Mode	Auto

IDE HDD Auto-Detection

Press <Enter> to autodetect the parameters of the IDE/SATA device on this channel. IDE Channel 0, 1 Master/Slave Configure your IDE/SATA devices by using one of the three methods below:

IDE Channel Master/Slave

Configure your IDE/SATA devices by using one of the three methods below:

Auto: Lets BIOS automatically detect IDE/SATA devices during the POST.
(Default)

None: If no IDE/SATA devices are used, set this item to "None" so the system will skip the detection of the device during the POST for faster system startup.

Manual: Allows you to manually enter the specifications of the hard drive when the hard drive access mode is set to CHS.

Access Mode

Set the hard drive access mode. Options are: Auto (default), CHS, LBA, and Large.

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3-2. Advanced BIOS Features

This section allows you configuring your system for basic operation. You have the opportunity to select the system's default speed, boot-up priority, keyboard operation and security.

Item	Optimized defaults
> Hard Disk Boot Priority	Press Enter
Virus Warning	Disabled
Quick Power On Self Test	Enabled
First Boot Device	USB Device
Second Boot Device	CDROM
Third Boot Device	Hard Disk
Boot Other Device	Enabled
Boot Up NumLock Status	On
Typematic Rate Setting	Disabled
Typematic Rate (Chars/Sec)	6
Typematic Delay (Msec)	250
Security Option	Setup
APIC Mode	Enabled
MPS Version Control For OS	1.4
OS Select For DRAM > 64MB	Non-OS2

APIC Mode

This item can enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance to PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQs resources for the system. Leave this field in its default setting.

MPS Version Control For OS

This item allows you selecting which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version that is supported by your operating system. To find out which version to use, consult the vendor of your operating system.

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3-3. Advanced Chipset Features

This section allows you configuring the system based on the specific features of the installed chipset. This chipset manages bus speeds and the access to the system memory resources, such as DRAM and the external cache. It also coordinates the communications with the PCI bus. It must be stated that these items should never be altered. The default settings have been set as they provide the best operating conditions for your system. Users can change settings if find any data is lost while operating the system.

Item	Optimized defaults
** VGA Setting **	
On-Chip Frame Buffer Size	8MB
DVMT Mode	Enabled
Total GFX Memory	128MB
Boot Display	CRT
Panel Number	1024x768x24Bit 1CH

On-Chip Frame Buffer Size

This field is used to select the onboard VGA's frame buffer size that is shared from the system memory. <Choice: 1MB, 8MB>

DVMT Mode

This feature allows you to select the Dynamic Video Memory Technology (DVMT) operating mode. <Choices: Enabled, Disabled>

Total GFX Memory

This item is sets the maximum amount of system memory that can be allocated as graphics memory. <Choice: 128MB, 256MB, MAX>

Boot Display

This field is used to select the type of display to use when the system boots. <Choice: CRT, LFP, CRT + LFP>

Panel Number

640x480x18bit 1CH	800x480x18bit 1CH
800x600x18bit_1CH	1024x600x18bit 1CH
1024x768x18bit_1CH	1366x768x18bit 1CH

Select appropriate LCD type according to the above Panel ID. If the LCD panel spec is not suitable for above list, please contact UNICORN for OEM BIOS/VBIOS request.

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3-4. Integrated Peripherals

The IDE hard drive controllers support up to two separate hard drives. These drives have a master/slave relationship that is determined by the cabling configuration used to attach them to the controller. Your system supports two IDE controllers--a primary and a secondary--so you can install up to four separate hard disks.

Integrated Peripherals

Item	Optimized defaults
> OnChip IDE Device	Press Enter
> SuperIO Device	Press Enter
GbE LAN ROM Control	Disabled
PCI-E LAN ROM Control	Disabled
> USB Device Setting	Press Enter

GbE (PCI-E) LAN ROM Control

By default, this field is disabled. Enable this field if you wish to use the boot ROM (instead of a disk drive) to boot-up the system and access the local area network directly.

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OnChip IDE Device

Item	Available Options:
*** On-Chip Serial ATA Setting ***	
SATA Mode	IDE
LEGACY Mode Support	Disabled
On-Chip Serial ATA	Enhanced Mode

LEGACY Mode Support

Disabled: Allows the SATA controllers to operating in Legacy IDE mode. In Legacy mode the SATA controllers use dedicated IRQs that cannot be shared by other devices. Set this option to Disabled if you wish to install operating systems that do not support Native mode.

Enabled: Allows the SATA controllers to operating in Native IDE mode. Enable Native IDE mode if you wish to install operating systems that support Native mode.

SuperIO Device

Item	Available Options:
Onboard Serial Port 1	3F8/IRQ4
Onboard Serial Port 2	2F8/IRQ3

USB Device Setting

Item	Available Options:
USB 1.0 Controller	Enabled
USB 2.0 Controller	Enabled
USB Operation Mode	High Speed
USB Keyboard Function	Enabled
USB Storage Function	Enabled

USB Operation Mode

This item select USB device operated on high speed (if possible) or full / low speed. <Choice: Full/Low Speed; High Speed>

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3-5. Power Management Setup

The Power Management Setup helps users save energy by configuring the system in the most effective and suitable way.

Item	Optimized defaults
ACPI function	Enabled
ACPI Suspend Type	S1S3
Run VGABIOS if S3 Resume	Auto
Power Management	User Define
Video off Method	DPMS
Video off In Suspend	Yes
Suspend Type	Stop Grant
Suspend Mode	Disabled
HDD Power Down	Disabled
Soft-Off by PWR-BTTN	Instant-Off
Wake-Up by PCI card	Enable
Wake-Up by LAN1	Enable
USB KB Wake-Up From S3	Enable
Resume by Alarm	Disabled
Date (of Month) Alarm	0
Time (hh:mm:ss) Alarm	0 : 0 : 0

ACPI Suspend Type

This field is used to select the type of Suspend mode.

Resume On RTC Alarm

When [Enabled], user can set RTC (real-time clock) alarm to awaken the system from the suspend mode at specific time.

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3-6. PnP/PCI Configurations

This section describes the configuration of the PCI bus system. PCI is a system that allows I/O device to operate at speeds nearing the speed of the CPU itself, when communicating with its own special components. This section covers some very technical items. It is strongly recommended that only experienced users make any changes to the default settings.

Item	Optimized defaults
Init Display First	Onboard
Reset Configuration Data	Disabled
Resources Controlled By	Auto(ESCD)
IRQ Resources	Press Enter

Reset Configuration Data

Enabled	The BIOS will reset the Extended System Configuration Data (ESCD) once automatically. It will then recreate a new set of configuration data.
Disabled	The BIOS will not reset the configuration data.

Resources Controlled By

Auto(ESCD)	The system will automatically detect the settings for you.
Manual	Choose the specific IRQ in the "IRQ Resources" field.

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3-7. PC Health Status

This screen shows the information of temperature, Fan speed and Vcore etc. It also can set CPU warning temperature to protect CPU.

PC Health Status

Item	Optimized defaults
CPU Warning Temperature	Disabled
Current System Temp	
Current CPU1 Temperature	
Fan1 Speed	
Vcore	
+12V	
+3.3V	
+1.5V_DDR3	
VCC (V)	
VBAT (V)	
5VSB (V)	

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Chapter 4. VGA, SDVO and drivers

4-1. Graphic controller Feature

The ENDAT-5100 integrated a high performance Intel® GMA3150 GFX engine with Intel® DVMT 4.0 technology. The Intel® GMA3150 offering the 3D enhancements enable greater flexibility and scalability. Improved GFX engine support Microsoft DirectX 9.0C, OpenGL 1.5 on Windows, and OpenGL 2.0 on Linux.

The ENDAT-5100 integrated graphics device (IGD) delivering cost competitive 3D, 2D and video capabilities. It contains an extensive set of instructions for 3D operations, 2D operations, motion compensation, overlay, and display control. The video engines support video conferencing and other video applications. The Intel® GMA3150 uses a UMA configuration with Intel® DVMT for graphics memory.

The ENDAT-5100 also has high bandwidth access to data through the system memory port.

The build-in Graphics Controller's main features include:

- High Performance 3D and 2D graphics controller
- Support Microsoft DirectX 9.0c
- Hardware frame buffer compression improves UMA (Unified Memory Architecture) memory efficiency
- VGA resolution up to 2048 x 1536
- LVDS (integrated by GMA3150) resolution up to 1366 x 768

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4-2. Driver Utility Installation Guide

1. When finishing the installation of Windows XP, Vista, please install the relative Intel® chipsets, display and AUDIO driver manually for compliance compatibility of hardware environment.
2. Please contact sales department of UNICORN for Embedded OS user driver (Linux, Windows CE and Windows XP embedded). All of embedded OS driver is not be included in any versions of driver CD-ROM from UNICORN.

Please download or check from Intel® web site: www.intel.com for more information or last versions of driver as needs!

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Appendix A: FLASH MEMORY UTILITY

Using this utility to update the system BIOS from a disk file to the on board Flash memory. Be aware the improper change of the system BIOS will cause the system to malfunction.

Using utility as follows:

1. Prepare a bootable (MS-DOS) storage (HDD, USB sticker, ZIP...etc) and copy the BIOS file and flash utility to same direction.
2. At the DOS prompt, type A:>AWDFLASH (or C:\AWDFLASH) and press <Enter>

AwardBIOS FLASH Utility V8.24G	
C>Phoenix Technologies Ltd. All Rights Reserved	
Flash Type –	
File Name to Program:	<input type="text"/>
Message:	

3. Enter the name of the system BIOS disk file into the "File Name to Program" field. The following message appears in the "Message" field
4. Do you want to save BIOS (y/n)?
5. To update the FLASH memory from the system BIOS disk file, type Y
6. After complete updating, please re-boot the system (press "F1" key)
7. For upgrade BIOS procedure, please refer to our web site:
<http://www.unicorn-computer.com.tw>

*** Please turn off system and clear CMOS data by JBAT1.**

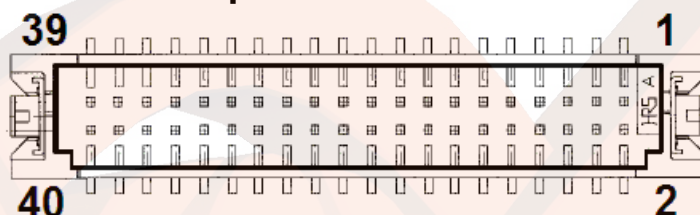
*** Please restart your system and load setup default.**

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Appendix B: LVDS PIN ASSIGNMENT

LVDS: Single /Dual Channel LVDS (18/24/36/48 bit only, 1.25mm)
MB: DF-13A-40DP-1.25V / Map: DF13-40DS-1.25C



Pin No.	Signal	Pin No.	Signal
1	VBL	2	VBL
3	GND	4	GND
5	DISP.ON/OFF	6	GND
7	LCD POWER	8	LCD POWER
9	GND	10	GND
11	Odd 0+	12	Odd 0-
13	Odd 1+	14	Odd 1-
15	Odd 2+	16	Odd 2-
17	Odd 3+	18	Odd 3-
19	Odd CLK+	20	Odd CLK -
21	GND	22	KEY
23	Even 0+	24	Even 0-
25	Even 1+	26	Even 1-
27	Even 2+	28	Even 2-
29	Even 3+	30	Even 3-
31	Even CLK+	32	Even CLK-
33	LCD POWER	34	LCD POWER
35	GND	36	GND
37	GND	38	GND
39	VBL	40	VBL

Please make sure the Pin 1 location before plug-in LCD connector.
Please leave pin 23rd ~ pin 32nd unconnected if the single channel LVDS function is needed.

Please double check "jumper setting & LCD cable's orientation" before power-on, any incorrect installation may caused damaged of the LCD.

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Appendix C: LIMITED WARRANTY

Standard Two years limited warranty on all our ENDAT series all-in-one motherboards and embedded board. Products that become defective during the warranty period shall be repaired, or subject to manufacturer's option, replaced. The limited warranty applies to normal proper usage of the hardware and does not cover products that have been modified or subjected to unusual electrical or physical stress. Unicorn Computer Corp is not liable to repair or replace defective goods caused by improper using or use of unauthorized parts. The following situations will be charged:

1. The products during the warranty but defective caused by improper using or artificial external pressure and result in the components damages. According to the damage situation, the manufacturer has the rights to decide to repair or not. The manufacturer will charge the parts/repair cost and the returning shipping charge.
2. The products out of warranty will charge the parts/repair cost and the returning shipping charge as per the repair status.
3. The manufacturer has the rights to decide to repair or not based on the stock of parts for the products which are phased out of the production.
4. Please e-mail or fax the RMA Service Request Form when have the defective products.



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RMA SERVICE REQUEST FORM

When requesting RMA service, please fill out this "RMA Service Request Form". This form needs to be shipped with your returns. Service cannot begin until we have this information.

RMA NO.:

Company:	Person to Contact:
Phone No:	Purchase Date :
Fax No. :	Applied Date :
Return Shipping Address:	

Model No.	Serial No.	Problem Description

Please specify the following when returning the RMA boards:

(1) Hardware Configuration (2) OS or Software (3) Testing Program

Authorized Signature